in another letter I shall, with your permission, proceed to prove this by the description of a false image in the telescope, a curious phenomenon hitherto unexplained.

My present sketch is, in its main features, the same as that published at Milan (*Pubb. dell' Oss. R. di Brera*, No. 5), only that all the minute stars and the exact form of the nebula have been added here with my *Amici No. I.*, with a magnifying power of 113.

To the right near *Merope* the nebula is so sharply defined that its curvature is clearly traceable, whilst its remaining outline is pale and indistinct. I could only succeed in distinguishing two nuclei, or nodules, and they but little more luminous than the rest.

A glance at the sketch is sufficient to show that in various parts many of the stars are omitted, which, for want of time and owing to pressure of other work, I have as yet been unable to put in. These may amount to some hundreds; indeed, even in the portions which seem thick with stars, many remain to be added, because the scale of the drawing is too small.

Being unable to foresee when it will be in my power to complete a more accurate work, I send this sketch, which is sufficiently so to compare with the drawings of others.

The circle shows the diameter of the field of view of my Steinheil, with an eye-piece of 24.

Comparing my drawing with that of Mr. Maxwell Hall, the two will be found to agree perfectly. That of Mr. Common, on the other hand, has evidently been executed with a telescope of insufficient power to show the *Merope* nebula. This will be obvious to anyone who examines the portions where Mr. Common has drawn three nebulous masses, where minute stars are shown in my sketch; invisible in his telescope as separate points of light, they must have appeared as nebulosity.

My sketch shows such a number of double stars that I have not hitherto been able to find them all in the catalogues, and it is worthy of note that the magnifying power is lower than that ordinarily used in the observation of double stars, showing that *Amici No. I.* gives images so clearly defined as to separate closely-united stars, even when they were not specially looked for, or previously known by me to be thus divisible.

Royal Observatory in Arcetri,
Florence, 1880, *May* 22.

Observations of Comet I. 1880, *made at the Royal Observatory, Cape of Good Hope.* By David Gill, Her Majesty's Astronomer at the Cape.

The following are the results of observations of Comet I. 1880, made here during the period of the visibility of the Comet. It is a matter of much regret that observations of the nucleus

could not be obtained nearer to perihelion. The view of the Comet was cut off to the south-west by Table Mountain, and the drawings of the tail, made February 2 to February 9, were made at Sea Point, situated to the west of Table Mountain.*

From the amount of haze near the horizon and the small optical power of the portable instrument employed, the nucleus could not be observed at Sea Point, and it was not until February 9, that anything like a nucleus could be made out at the Royal Observatory, and then only by glimpses through cloud.

From February 10 to February 15 (both inclusive) observations were obtained with the $8\frac{1}{2}$ foot Equatoreal (6·9 inches' aperture), but so faint and ill-defined was the object, and so unsatisfactory our instrumental means, that, notwithstanding the greatest care, I do not think the places can be relied upon nearer than within 10″ of arc. On February 10 the parallel-wire micrometer was employed, but afterwards it became necessary to use the ring micrometer.

The observations of the tail of the Comet were made by myself. The observations of the nucleus were made by myself and Mr. Finlay, first assistant—about an equal number of observations being made on each evening by each observer.

The places of the stars of comparison, *a*, *b*, *c*, *d*, *e*, *f*, were determined by early morning meridian observations in the end of June and beginning of July of the present year. It was impossible, from daylight, to obtain meridian observations of these stars sooner. The mean place of the comparison star, $7\frac{1}{2}$ mag., employed by Mr. Ellery on February 14, is also given, derived from meridian observations made in the end of June of the present year.

The corrections of this star to apparent place for February 14 are

To R.A.	$+0^{s}.52$
N.P.D.	$+3''.92$

Monday, Feb. 2. A small portion only of the tail was seen projecting over south shoulder of Table Mountain. The drawing has no pretension to accuracy.

Tuesday, Feb. 3. This drawing was made from Mr. Henry Solomon's Garden, at Green Point. The night was cloudy, and very hazy, so that the star β *Pis. Aust.* could not be seen, but only guessed at. The only really satisfactory part of the drawing is the position of the tail, as defined by the stars θ and *l Gruis*. This is accurately shown for 8.30. At a little past 9 o'clock the star θ *Gruis* was fairly immersed in the tail, and the star *l* was near its southern side.

* See Plate in the April No. facing p. 300.—Ed.

Wednesday, Feb. 4. There is a little doubt about the precise position of the tail relative to β *Pis. Aust.* The star was nearly lost in haze near the horizon, but the position of the tail relative to ϕ *Gruis*, θ *Phœnicis*, τ *Phœn.*, is extremely exact; and relative to η, ξ, and ζ *Phœnicis* is fairly exact—as it there became very faint, but could still be traced beyond α *Hydri* without a definite outline. Epoch. $8^h\ 33^m$ Cape M. T.

Thursday, Feb. 5. Owing to haze near the horizon there is a slight uncertainty about the position of the tail relative to γ *Pis. Aust.*, though not much. The position of the tail relative to ϵ *Phœn.* is very exact. A line joining ϵ *Phœn.* and μ *Phœn.* is exactly bisected by the northern edge of the tail, whilst ρ *Phœn.* just marked the limit of the southern border of the tail. After this the tail could be traced, as shown, to α *Reticuli*, but the border could not be laid down with great precision. Epoch $8^h\ 40^m$ Cape M. T.

Friday, Feb. 6. The position of the tail very precisely shown relative to δ *Pis. Aust.*, and a small star between δ and Fomalhaut, but owing to haze the position relative to ϵ *Pis. Aust.* could not be very precisely shown. The position of tail is shown with great accuracy relative to β *Sculp.*, κ and μ *Phœn.* The north border of the tail was well marked by β and δ *Phœn.*, which were only just involved in it. The southern border of the tail seemed to pass half-way between q^1 and q^2, and ϕ *Erid.* and η *Horlog.* were just involved in it. The tail could be traced as shown, without any well-defined boundary passing undoubtedly to N. of α *Retic.* and within α *Doradus* beyond which it was just visible nearly up to *Canopus.* The greater part of the drawing was made at $8^h\ 30^m$, the faint part near *Canopus*, at 9^h.

Saturday, Feb. 7. It is obvious from our present knowledge of the path of the nucleus, that I have been deceived on this date, by the haze and the faintness of the nucleus, into supposing that, as no condensation or nucleus, could be made out, the tail must extend and could be traced as far as ϵ *Pis. Australis.*

Feb. 8 and 9. The drawings were made by glimpses through cloud, and are both unreliable. That of Feb. 9 is undoubtedly wrong—it would appear that θ has been mistaken for μ Sculptoris.

Observations of Comet I. 1880, at the Royal Observatory, Cape of Good Hope. (Observers, Gill and Finlay.)

	Cape Mean Time.	Right Ascension.	Parallax Factor.	No. of Obsns.	N.P.D.	Parallax Factor.	No. of Obsns.	Comparison Star.
d	h m s	h m s			° ′ ″			
Feb. 10	8 50 2	0 3 58·59	+0·0665	3				*a*
	8 52 49	,,	...		123 43 15·53	+0·4760	2	*a*
11	8 33 4	0 20 22·16	+0·0661	4	,,	...		*b*
	8 45 42	0 20 31·53	+0·0664	4	123 31 30·78	+0·4434	4	Lacaille 94
12	8 42 18	0 36 28·06	+0·0658	5	123 11 33·93	+0·4145	4	*c*
	8 42 18	0 36 28·29	+0·0658	5	123 11 23·44	+0·4145	5	*d*
13	8 30 57	0 51 29·32	+0·0644	7	122 44 20·93	+0·3888	5	Lacaille 290
14	8 23 5	1 6 7·89	+0·0627	1	122 11 17·23	+0·3435	1	σ Sculptoris
	8 42 51	1 6 19·25	+0·0641	3	122 10 52·86	+0·3806	3	*e*
	8 42 51	1 6 19·79	+0·0641	3	122 10 57·19	+0·3806	3	*f*
15	8 24 31	1 19 54·92	+0·0616	10	121 32 52·17	+0·3340	10	Lacaille 384

The observations are not corrected for Parallax, Mean R.A. and N.P.D. of the stars of comparison.

Star.	R.A. 1880·0	N.P.D. 1880·0	No. of Obsns.	Whence derived.
	h m s	° ′ ″		
a (8 mag.)	0 2 52·80	123 42 17·01	2	Cape Obs. 1880
b (8 mag.)	0 17 34·16	123 31 59·26	3	,, ,,
Lacaille 94	0 21 58·49	123 40 11·20		Cape 1878, & Melb.
c (8 mag.)	0 34 32·91	123 13 7·58	2	Cape Obs. 1880
d (8 mag.)	0 41 50·65	123 6 48·87	2	,, ,,
Lacaille 290	0 57 41·58	122 43 25·35		,, 1878
σ Sculptoris	0 56 42·44	122 11 53·71		Cape 1878, & Melb.
e (9 mag.)	1 7 49·07	122 12 37·30	2	Cape Obs. 1880
f (8·7 mag.)	1 11 10·04	122 2 32·98	2	,, ,,
Lacaille 384	1 17 55·88	121 34 17·09		,, 1878

Mean R.A. and N.P.D. of * observed with Comet at Melbourne on Feb. 14. (7·8 mag.) and $1^h\ 0^m\ 20^s{\cdot}02$. $\Delta = 122°\ 29'\ 46''{\cdot}79$.

On a Method of determining the Pressure on the Solar Surface. By Prof. E. Wiedemann.

In a paper published in *Wied. Ann.* v., p. 503 (1878), I have shown how experiments on interference bands produced by two rays of light of large difference in phase may give an approximate measure of the mean free path of a molecule in a gas, or rather of the time elapsing between two encounters. I should like to draw the attention of astronomers to the fact that we may in this way obtain information as to the pressure in a luminous gas, whether in our laboratory on the solar surface or in the tail of a comet; for the time elapsing between two encounters of a molecule is almost independent of the temperature, and chiefly depends on the pressure.

In order to make the determination, we must decompose the light sent out by the gaseous body—say a protuberance—by means of the spectroscope, and separate a ray of light, which must be as homogeneous as possible. If we produce Newton's rings between two adjustable pieces of glass and count the number of interference bands which are visible we shall obtain the required information. In the above-mentioned paper I have discussed the number of interference bands seen by J. J. Müller in a sodium flame, and shown that the result agrees well with the